

#### 4. 3D re-analysis with the 2010 RAW ROV HD video

The new videos (RAW HD) do not have time-stamps. Since they see more area from the ocean floor and potentially interesting objects, we have redone our 3d analysis to produce better rendering around potentially interesting objects. These objects have been brought to our attention by Tim Mellon during several email exchanges between him and Jay.

Description	Video	Timestamp	Actions performed	Figure on Jay's former Mellon image catalog
1. Proposed Engine	2010 ROV RAW HD (ROV OPS_0010134 0012XO.mov)	13:42:12:01	Full 3D reconstruction	5
2. Proposed Box		13:36:11:00		13
3. Proposed Propeller blades		13:36:07:06		15
4. Proposed Second Main Landing Gear		13:36:29:01		17
5. Proposed Propeller blades		13:36:05:14		20
6. Proposed First Main Landing Gear		13:36:19:15		24

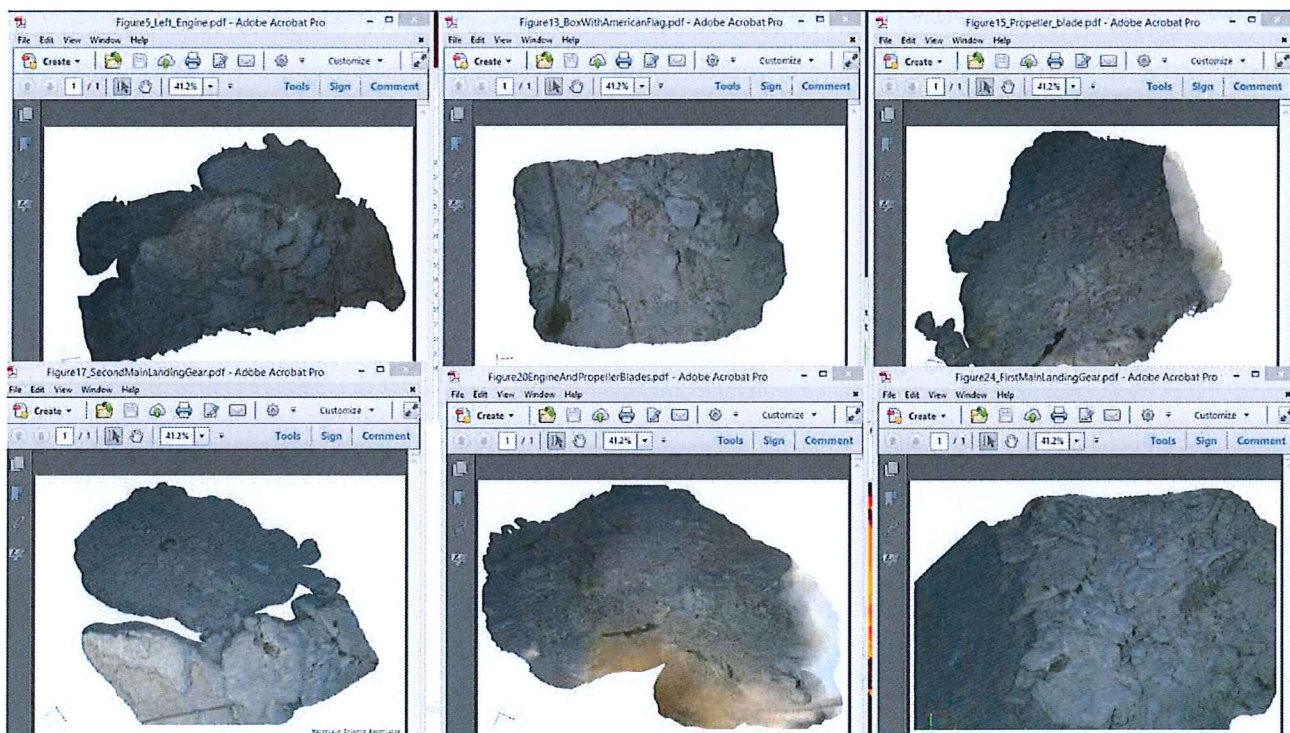


Figure 16 3D models regenerated from the 2010 RAW ROV HD video

3D models for each proposed object in the table above are attached in the external hard drive as interactive 3D PDF files. (see files in TimMellon\3d\_reconstruction\_from\_RAW\_video)

5. What is the size of the rope compared to the size of the jaw?



Figure 17 A frame showing the JAW grabbing the rope from video ROV OPS\_0010180 0015M1.mov

**Three Jaw Grabber**

The SeaBotix three jaw grabber provides the ability for small and large object retrieval, messenger line deployment and various other tasks.

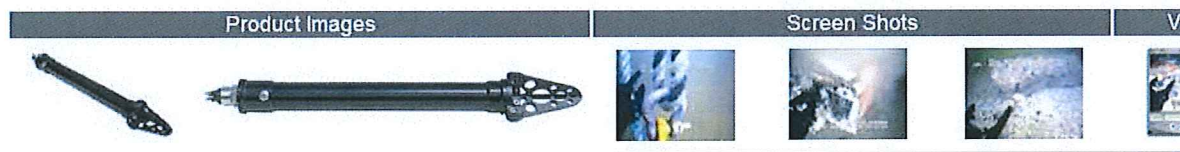


Figure 18 We ordered one jaw from SeatBotix <http://www.seabotix.com/products/grabber.htm>







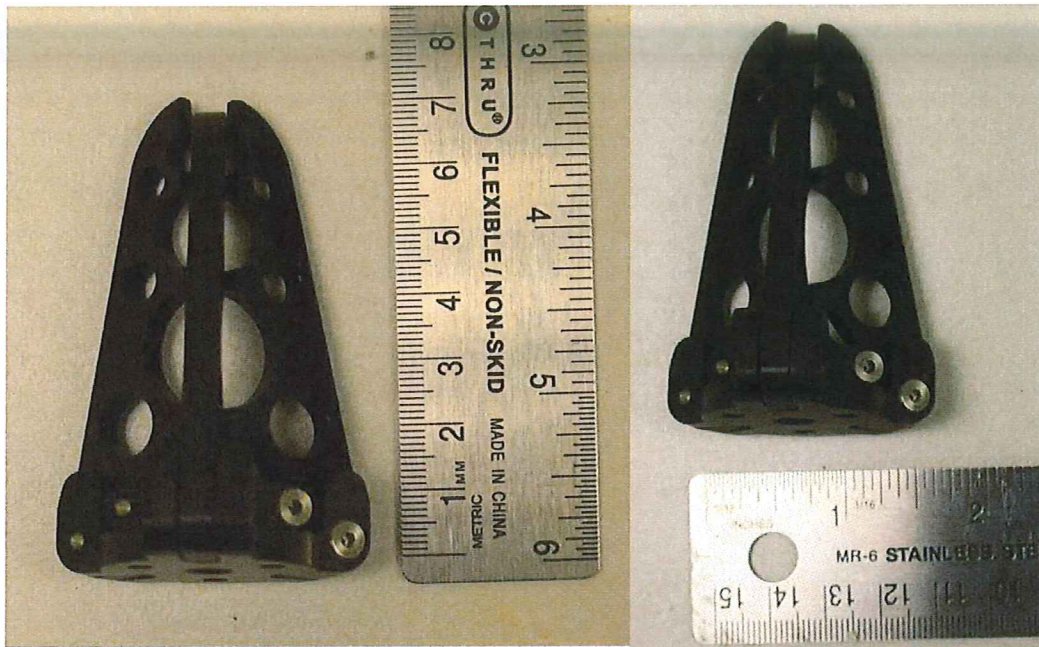


Figure 19 Jaw dimensions

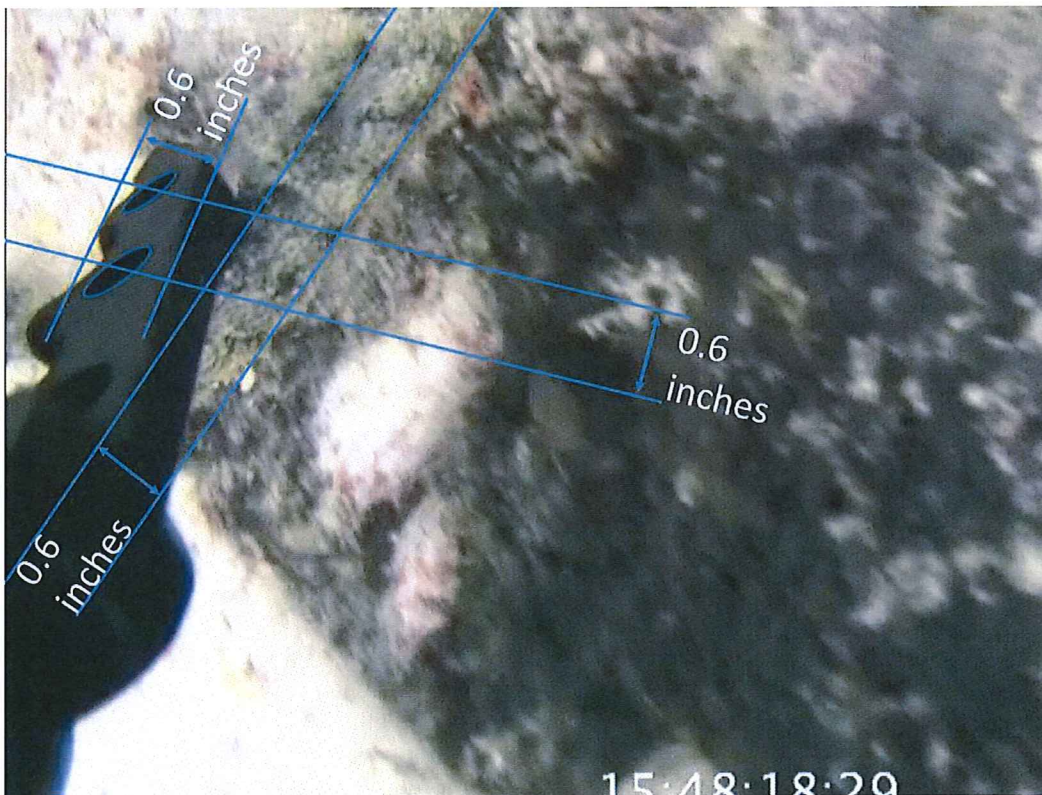


Figure 20 Image based rope dimension analysis on a video frame from ROV OPS\_0010180 0015M1.mov





Figure 21  $\frac{3}{4}$ " (left) is too big and  $\frac{1}{2}$ " (right) is too small, whereas  $\frac{5}{8}$ " (middle) rope fits well to the jaw

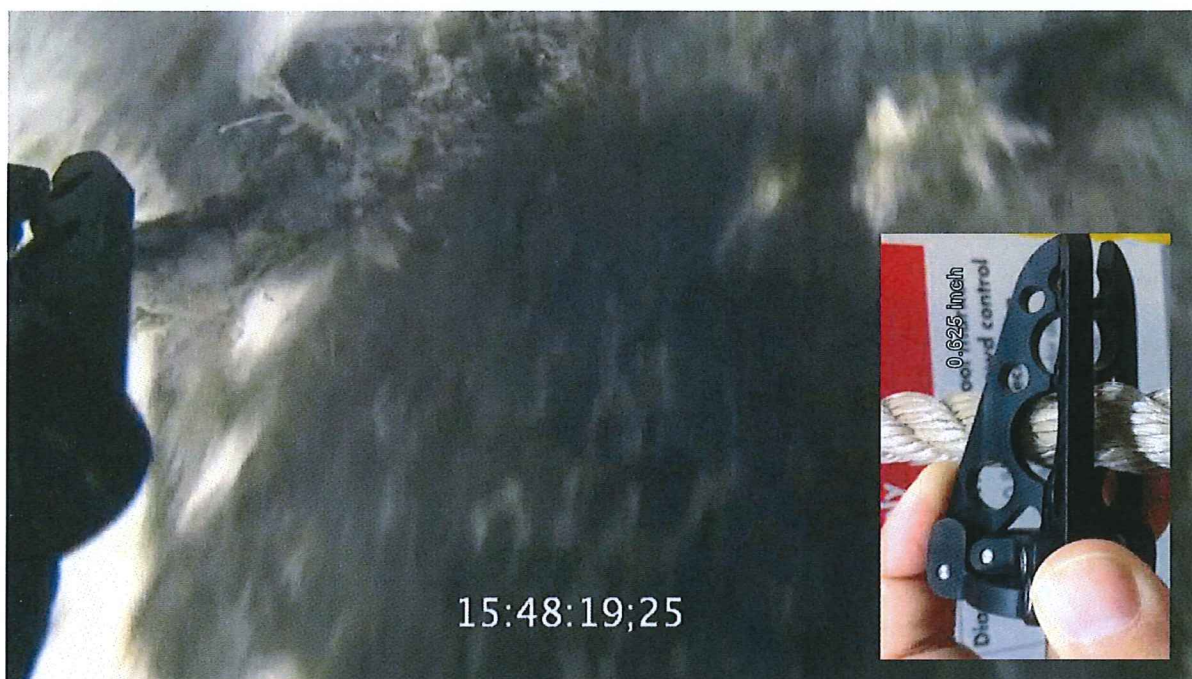


Figure 22 A frame from the 2010 video showing how well  $\frac{5}{8}$ " rope fits to the jaw